

FIG. 1A

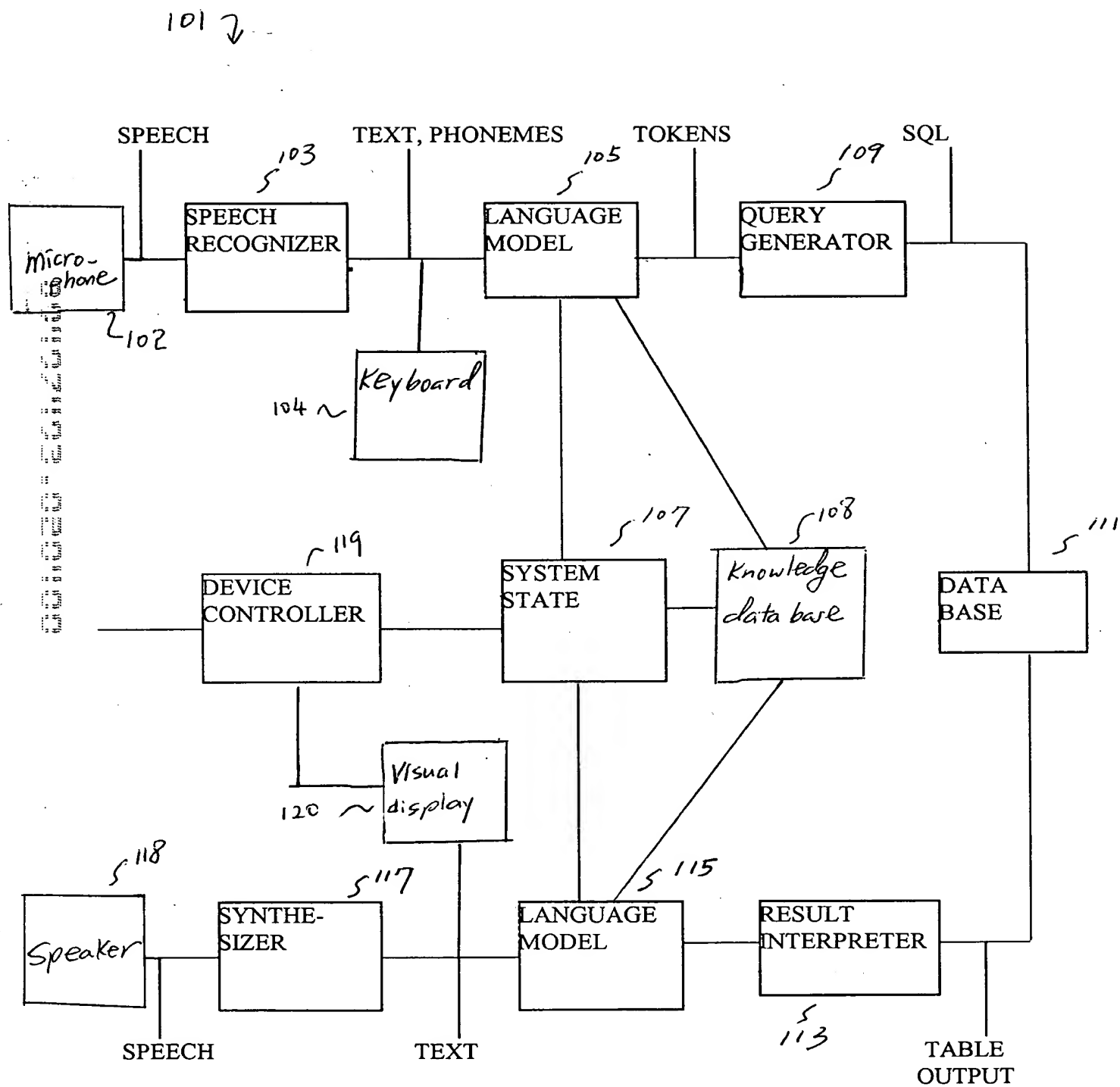
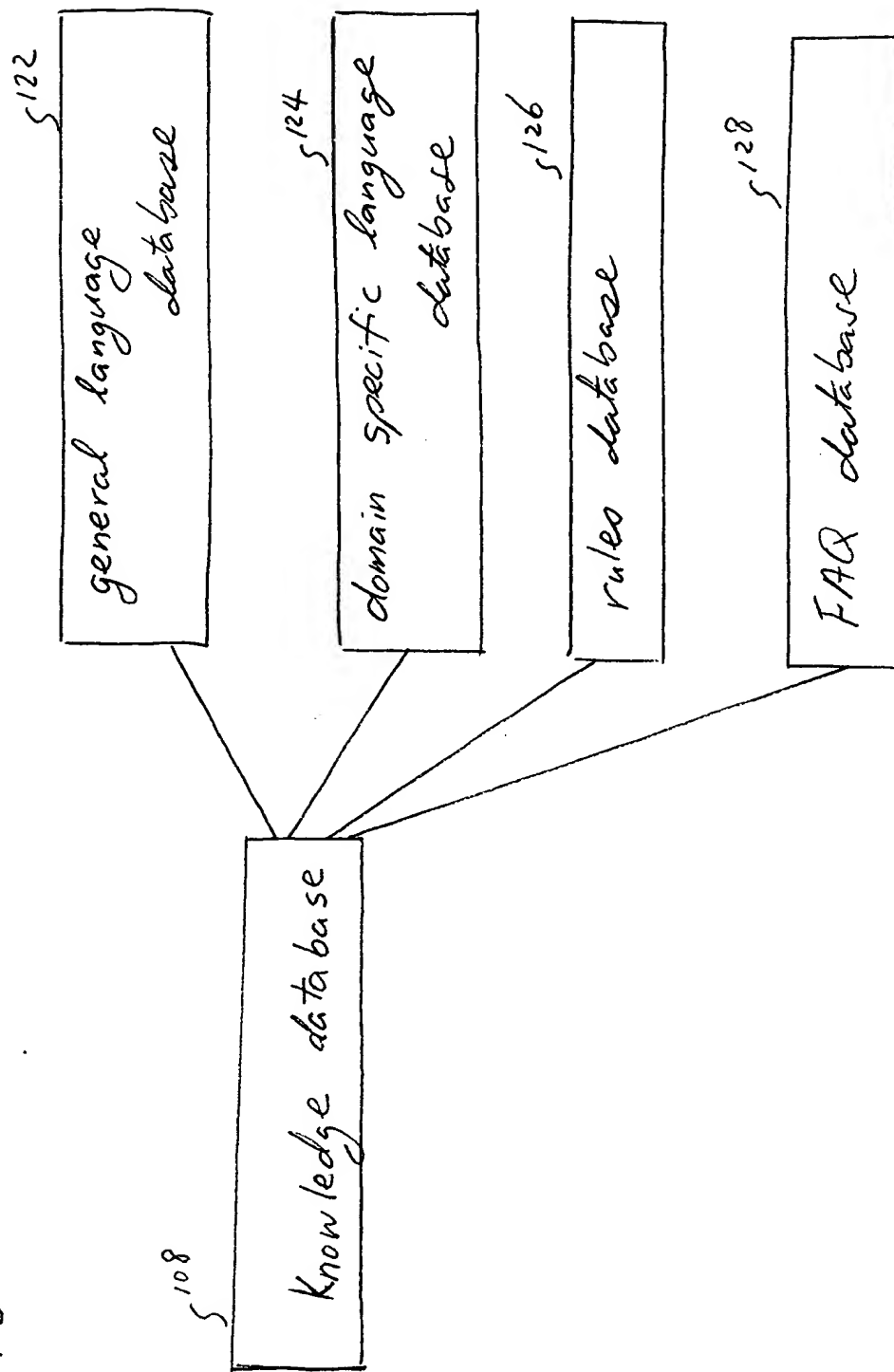
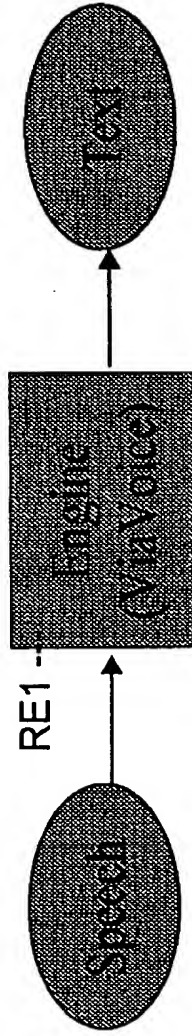


FIG. 1B



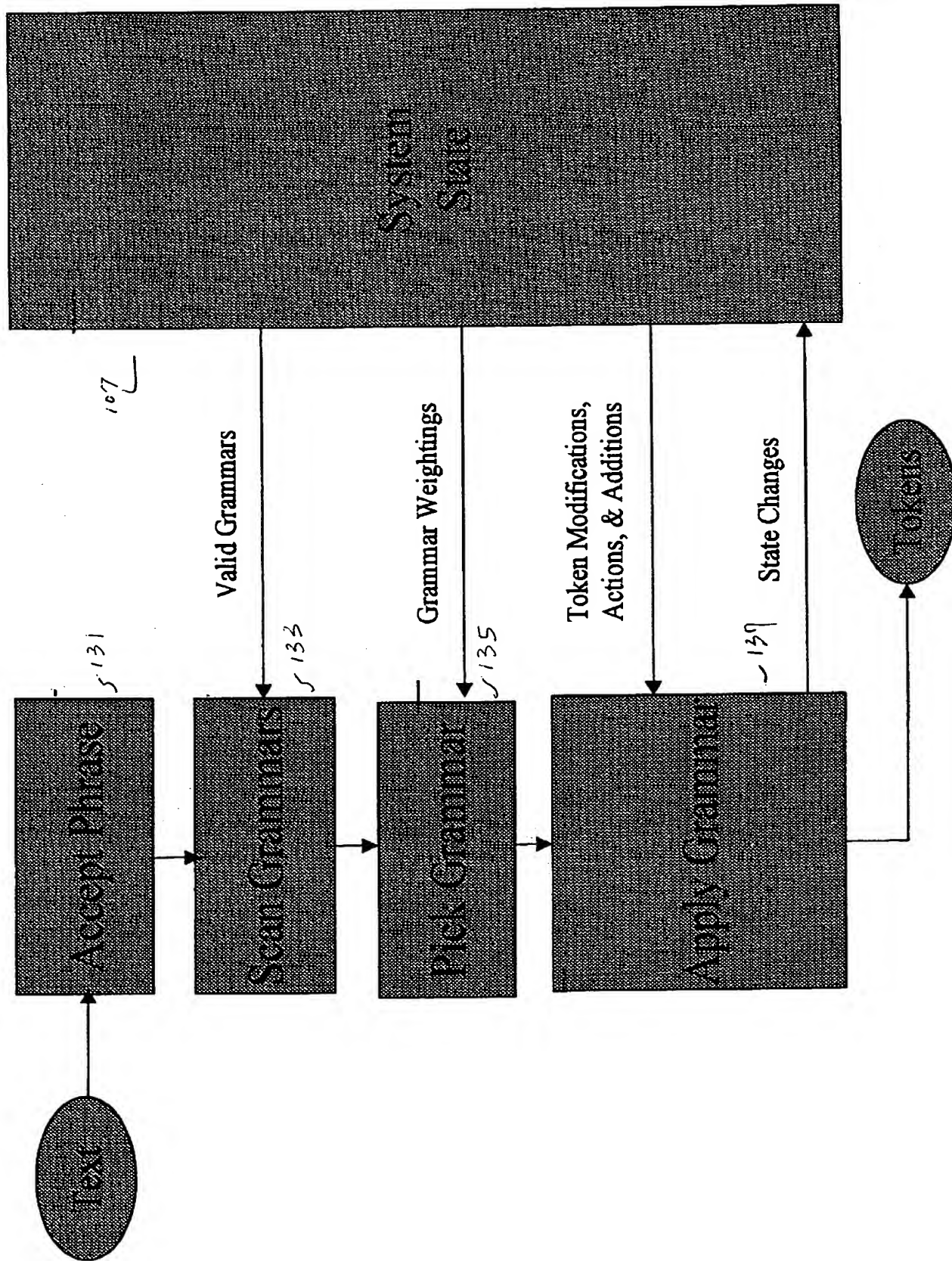
Recognition



103 ↗

FIG. 2

Language Model I



Query Generation

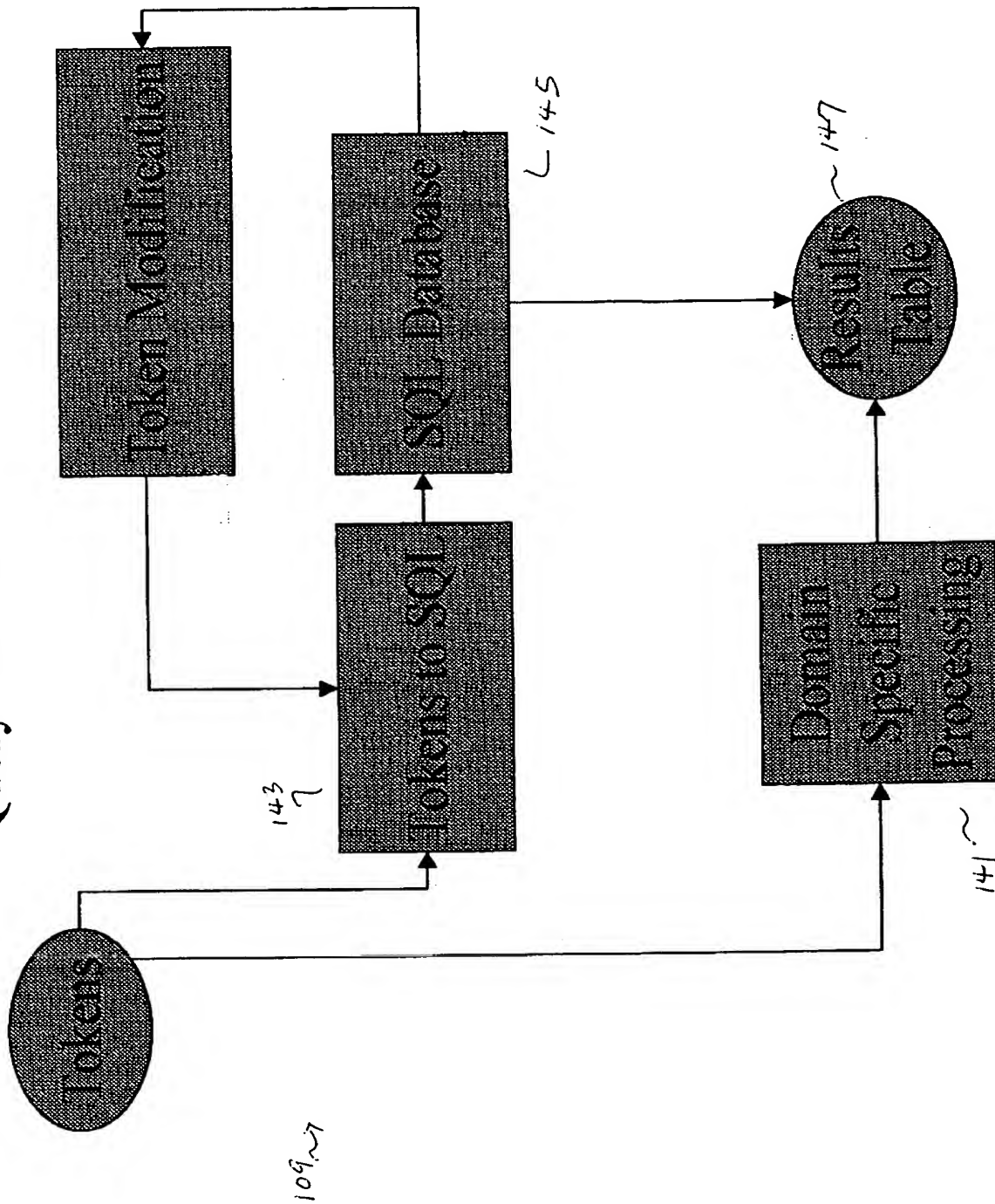


FIG.4

Results Processing

113

147

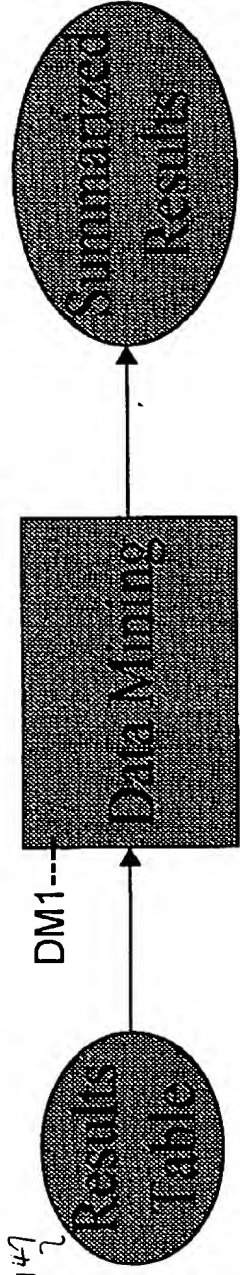


FIG. 5

Language Model II

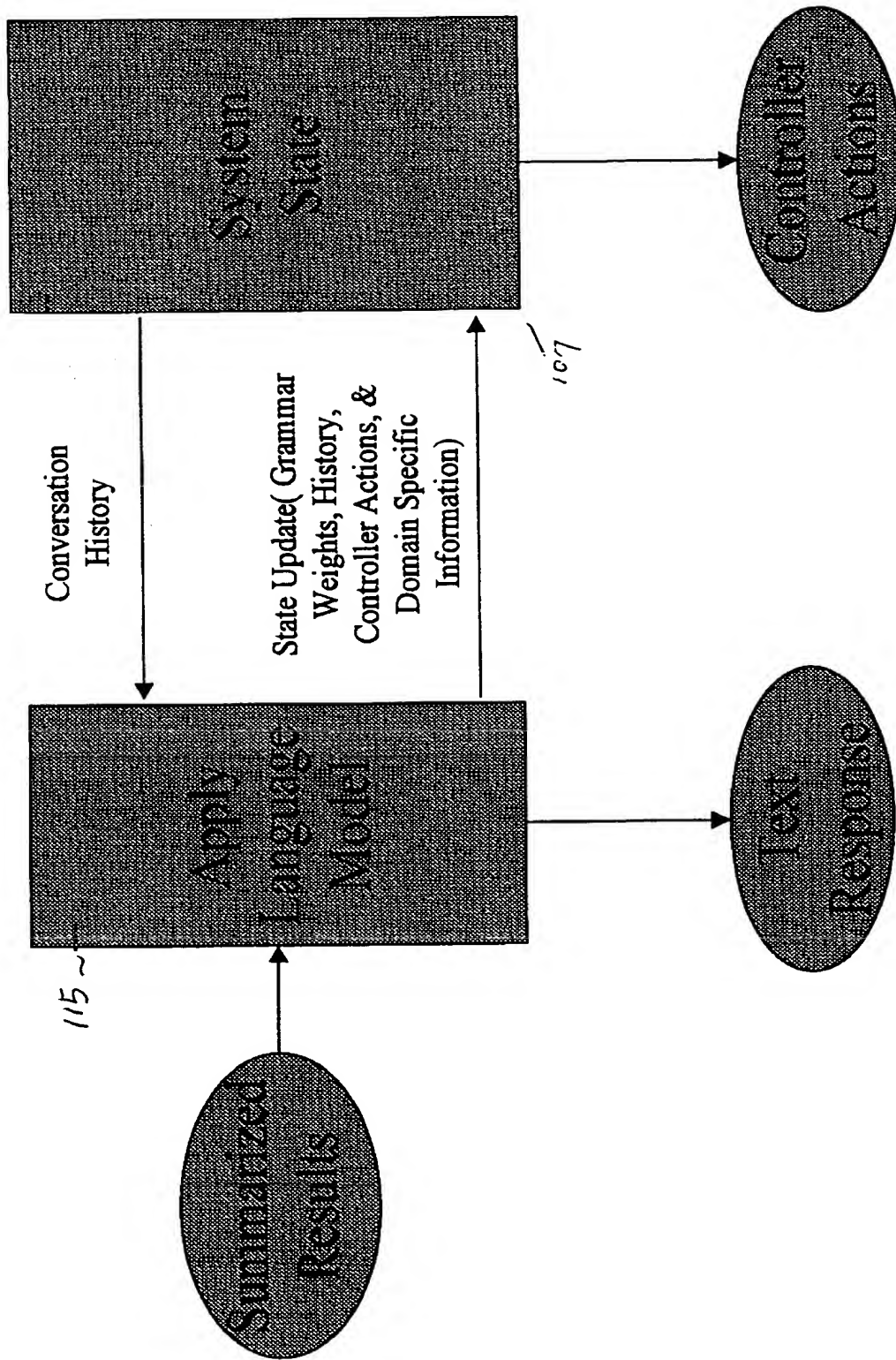
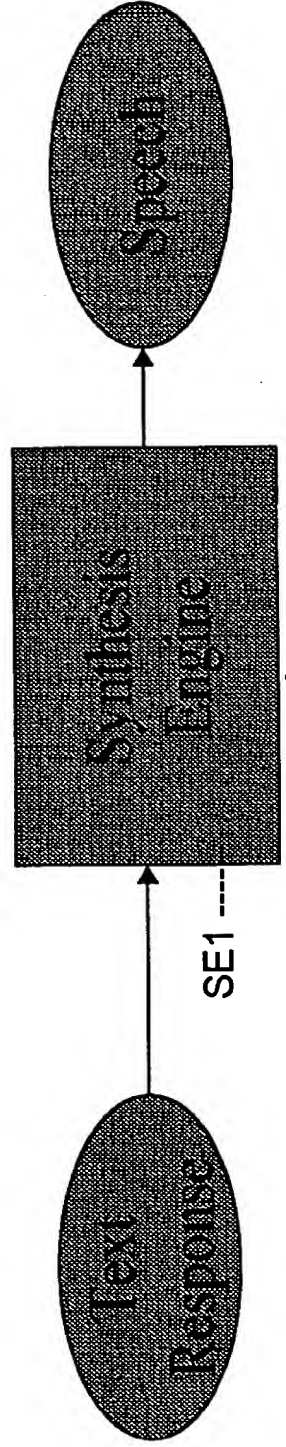


FIG. 6

FIG. 7

Synthesis

117



181 ~
183 ~
185 ~
187 ~
189 ~
191 ~
193 ~

START —

SPEECH QUERY

CONVERT
TO TEXT

SCAN SYSTEM
STATE FOR
VALID
GRAMMARS

SELECT AND
APPLY
GRAMMARS

SEND STATE
CHANGES TO
SYST STATE
AND MEMORIZE

GENERATE
TOKENS

SEND TOKENS
TO QUERY GEN

CONVERT
TOKENS TO SQL

SEARCH DATA
BASE

INTERPRET
RESULTS

APPLY
LANGUAGE
MODEL USING
CONVERSATION
HISTORY FROM
SYSTEM STATE

UPDATE
SYSTEM STATE
AND MEMORIZE
NEW DATA

SYNTHESIZE TO
SPEECH

CONTROL
DEVICE

RETURN TO
SPEECH QUERY
FOR FURTHER
SPECIFIC
QUERIES

FIG. 8

~195

~197

~199

~201

~203

~207

~205

~209

301

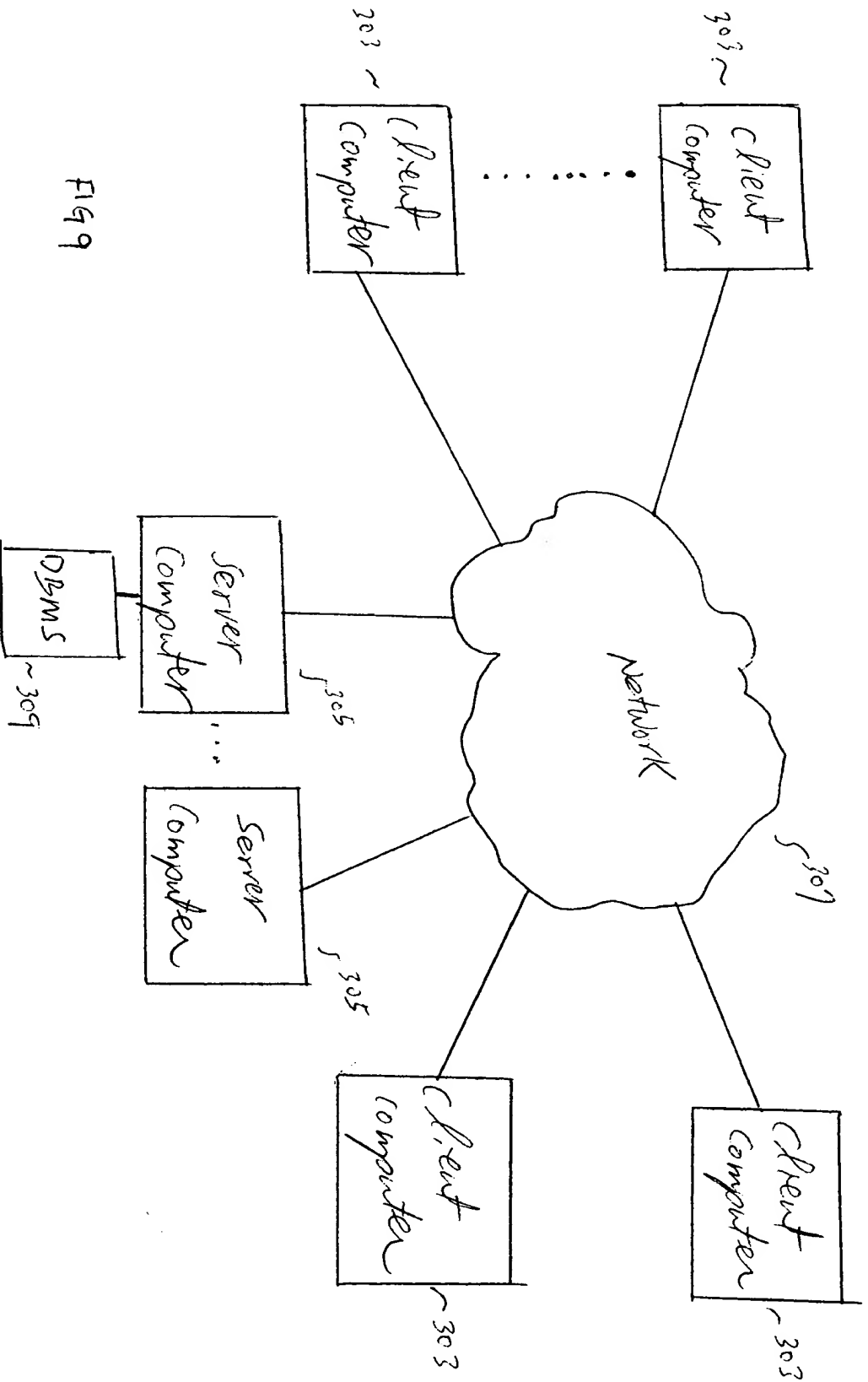


Fig 9